

Coombe House
 Coombe Square
 Thatcham RG19 4JF

LAND SOUTH OF ROMSEY AVENUE
 PORTCHESTER



Date 09/10/2018 16:03
 File SW NETWORK.MDX

Designed by JOK
 Checked by TSW

Micro Drainage Network 2016.1

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	100
Site Location GB 459600 105500 SU 59600 05500	
C (1km)	-0.026
D1 (1km)	0.440
D2 (1km)	0.317
D3 (1km)	0.373
E (1km)	0.301
F (1km)	2.238
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
Add Flow / Climate Change (%)	10
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm

<< - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	40.614	0.400	101.5	0.022	4.00	0.0	0.600		o	150	Pipe/Conduit	
S2.000	9.976	0.250	39.9	0.023	4.00	0.0	0.600		o	150	Pipe/Conduit	
S1.001	50.894	0.375	135.7	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S3.000	68.668	0.300	228.9	0.076	4.00	0.0		0.060	→ *		Bio-Retention Area	
S3.001	35.673	0.200	178.4	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S4.000	58.273	0.200	291.4	0.065	4.00	0.0		0.060	→ *		Bio-Retention Area	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	4.68	8.250	0.022	0.0	0.0	0.3	1.00	17.6	3.3
S2.000	50.00	4.10	8.100	0.023	0.0	0.0	0.3	1.60	28.2	3.4
S1.001	50.00	5.66	7.850	0.045	0.0	0.0	0.6	0.86	15.2	6.7
S3.000	50.00	12.30	8.200	0.076	0.0	0.0	1.0	0.14	15.5	11.3
S3.001	50.00	13.09	7.900	0.076	0.0	0.0	1.0	0.75	13.2	11.3
S4.000	50.00	12.07	7.950	0.065	0.0	0.0	0.9	0.12	14.6	9.7

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S4.001	3.378	0.050	67.6	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S1.002	56.731	0.350	162.1	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S5.000	46.471	0.400	116.2	0.040	4.00	0.0		0.060	→ *		Bio-Retention Area	
S5.001	3.541	0.075	47.2	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S6.000	42.919	0.400	107.3	0.040	4.00	0.0		0.060	→ *		Bio-Retention Area	
S6.001	5.654	0.075	75.4	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S1.003	39.033	0.475	82.2	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S7.000	40.097	0.350	114.6	0.064	4.00	0.0	0.600		o	300	Pipe/Conduit	
S7.001	42.607	0.300	142.0	0.033	0.00	0.0	0.600		o	300	Pipe/Conduit	
S7.002	36.660	0.250	146.6	0.035	0.00	0.0	0.600		o	300	Pipe/Conduit	
S7.003	27.668	0.250	110.7	0.016	0.00	0.0	0.600		o	300	Pipe/Conduit	
S8.000	22.687	0.250	90.7	0.025	4.00	0.0	0.600		o	225	Pipe/Conduit	
S9.000	17.756	0.250	71.0	0.023	4.00	0.0	0.600		o	225	Pipe/Conduit	
S8.001	41.268	0.400	103.2	0.032	0.00	0.0	0.600		o	225	Pipe/Conduit	
S8.002	7.193	0.500	14.4	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S7.004	39.865	0.200	199.3	0.028	0.00	0.0	0.600		o	300	Pipe/Conduit	
S7.005	18.827	0.150	125.5	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S4.001	50.00	12.11	7.750	0.065	0.0	0.0	0.9	1.23	21.7	9.7
S1.002	50.00	14.01	7.400	0.186	0.0	0.0	2.5	1.02	40.7	27.7
S5.000	50.00	8.11	7.600	0.040	0.0	0.0	0.5	0.19	15.3	6.0
S5.001	50.00	8.15	7.200	0.040	0.0	0.0	0.5	1.47	25.9	6.0
S6.000	50.00	7.61	7.600	0.040	0.0	0.0	0.5	0.20	16.6	6.0
S6.001	50.00	7.69	7.200	0.040	0.0	0.0	0.5	1.16	20.5	6.0
S1.003	50.00	14.46	7.050	0.266	0.0	0.0	3.6	1.44	57.4	39.6
S7.000	50.00	4.46	8.000	0.064	0.0	0.0	0.9	1.47	103.8	9.5
S7.001	50.00	4.99	7.650	0.097	0.0	0.0	1.3	1.32	93.1	14.4
S7.002	50.00	5.47	7.350	0.132	0.0	0.0	1.8	1.30	91.6	19.7
S7.003	50.00	5.77	7.100	0.148	0.0	0.0	2.0	1.49	105.6	22.0
S8.000	50.00	4.28	8.000	0.025	0.0	0.0	0.3	1.37	54.6	3.7
S9.000	50.00	4.19	8.000	0.023	0.0	0.0	0.3	1.55	61.8	3.4
S8.001	50.00	4.81	7.750	0.080	0.0	0.0	1.1	1.29	51.2	11.9
S8.002	50.00	4.84	7.350	0.080	0.0	0.0	1.1	3.47	137.9	11.9
S7.004	50.00	6.37	6.850	0.256	0.0	0.0	3.5	1.11	78.5	38.1
S7.005	50.00	6.60	6.650	0.256	0.0	0.0	3.5	1.40	99.1	38.1

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S10.000	26.127	0.250	104.5	0.020	4.00	0.0		0.060	- x		Bio-Retention Area	🔴
S10.001	9.356	0.200	46.8	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	🔴
S11.000	32.810	0.300	109.4	0.035	4.00	0.0		0.060	- x		Bio-Retention Area	🔴
S11.001	4.960	0.150	33.1	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	🔴
S1.004	70.314	0.250	281.3	0.020	0.00	0.0	0.600		o	300	Pipe/Conduit	🔴
S1.005	57.930	0.500	115.9	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	🔴
S1.006	11.812	0.250	47.2	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	🔴
S1.007	5.141	0.050	102.8	0.000	0.00	0.0	0.600		o	100	Pipe/Conduit	🔴

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S10.000	50.00	6.17	7.100	0.020	0.0	0.0	0.3	0.20	22.5	3.0
S10.001	50.00	6.28	6.850	0.020	0.0	0.0	0.3	1.47	26.1	3.0
S11.000	50.00	6.79	7.100	0.035	0.0	0.0	0.5	0.20	20.5	5.2
S11.001	50.00	6.84	6.800	0.035	0.0	0.0	0.5	1.76	31.0	5.2
S1.004	50.00	15.72	6.500	0.597	0.0	0.0	8.1	0.93	65.9«	88.9
S1.005	50.00	16.38	6.250	0.597	0.0	0.0	8.1	1.46	103.2	88.9
S1.006	50.00	16.47	5.750	0.597	0.0	0.0	8.1	2.29	162.1	88.9
S1.007	50.00	16.58	6.600	0.597	0.0	0.0	8.1	0.76	6.0«	88.9

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.022	0.022	0.022
2.000	-	-	100	0.023	0.023	0.023
1.001	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.076	0.076	0.076
3.001	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.065	0.065	0.065
4.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.040	0.040	0.040
5.001	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.040	0.040	0.040
6.001	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.064	0.064	0.064
7.001	-	-	100	0.033	0.033	0.033
7.002	-	-	100	0.035	0.035	0.035
7.003	-	-	100	0.016	0.016	0.016
8.000	-	-	100	0.025	0.025	0.025
9.000	-	-	100	0.023	0.023	0.023
8.001	-	-	100	0.032	0.032	0.032
8.002	-	-	100	0.000	0.000	0.000
7.004	-	-	100	0.028	0.028	0.028
7.005	-	-	100	0.000	0.000	0.000
10.000	-	-	100	0.020	0.020	0.020
10.001	-	-	100	0.000	0.000	0.000
11.000	-	-	100	0.035	0.035	0.035
11.001	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.020	0.020	0.020
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.597	0.597	0.597

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.007	S	6.750	6.550	7.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	10.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Return Period (years) 100

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Synthetic Rainfall Details

Site Location	GB 459600 105500 SU 59600 05500	F (1km)	2.238
C (1km)	-0.026	Summer Storms	Yes
D1 (1km)	0.440	Winter Storms	Yes
D2 (1km)	0.317	Cv (Summer)	0.750
D3 (1km)	0.373	Cv (Winter)	0.840
E (1km)	0.301	Storm Duration (mins)	30

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Storage Structures for Storm

Bio-Retention Area Pipe: S3.000

Manning's N 0.060 Infiltration Coefficient Base (m/hr) 0.00000
 Invert Level (m) 8.200 Infiltration Coefficient Side (m/hr) 0.00000
 Porosity 1.00 Safety Factor 2.0

Under Drain Details

Base Area (m²) 154.0 Diameter (m) 0.150
 Base Perimeter (m) 127.000 Number of Pipes 1
 Top Area (m²) 172.0 Manning's N 0.015
 Depth above Invert Level (m) 0.015

Filtration Layers

Filter Side Infiltration (m/hr) 0.00000

Name	Depth (mm)	Porosity	Rate (m/hr)	Safety Factor
------	------------	----------	-------------	---------------

Void	300	1.00	10.00000	2.0
Mulch	100	0.30	1.00000	2.0
Filtration	700	0.10	0.03600	2.0
Transition	100	0.10	0.18000	2.0
Storage	600	0.30	1.00000	2.0

Bio-Retention Area Pipe: S4.000

Manning's N 0.060 Infiltration Coefficient Base (m/hr) 0.00000
 Invert Level (m) 7.950 Infiltration Coefficient Side (m/hr) 0.00000
 Porosity 1.00 Safety Factor 2.0

Under Drain Details

Base Area (m²) 146.0 Diameter (m) 0.150
 Base Perimeter (m) 132.000 Number of Pipes 1
 Top Area (m²) 170.0 Manning's N 0.015
 Depth above Invert Level (m) 0.050

Filtration Layers

Filter Side Infiltration (m/hr) 0.00000

Name	Depth (mm)	Porosity	Rate (m/hr)	Safety Factor
------	------------	----------	-------------	---------------

Void	300	1.00	10.00000	2.0
Mulch	100	0.30	1.00000	2.0
Filtration	700	0.10	0.03600	2.0
Transition	100	0.10	0.18000	2.0
Storage	600	0.30	1.00000	2.0

Bio-Retention Area Pipe: S5.000

Manning's N 0.060 Infiltration Coefficient Base (m/hr) 0.00000
 Invert Level (m) 7.600 Infiltration Coefficient Side (m/hr) 0.00000
 Porosity 1.00 Safety Factor 2.0

Under Drain Details

Base Area (m²) 75.0 Depth above Invert Level (m) 0.050 Manning's N 0.015
 Base Perimeter (m) 80.000 Diameter (m) 0.150
 Top Area (m²) 90.0 Number of Pipes 1

Filtration Layers

Filter Side Infiltration (m/hr) 0.00000

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Bio-Retention Area Pipe: S5.000

Name	Depth (mm)	Porosity	Rate (m/hr)	Safety Factor
Void	300	1.00	10.00000	2.0
Mulch	100	0.30	1.00000	2.0
Filtration	700	0.10	0.03600	2.0
Transition	100	0.10	0.18000	2.0
Storage	600	0.30	1.00000	2.0

Bio-Retention Area Pipe: S6.000

Manning's N 0.060 Infiltration Coefficient Base (m/hr) 0.00000
 Invert Level (m) 7.600 Infiltration Coefficient Side (m/hr) 0.00000
 Porosity 1.00 Safety Factor 2.0

Under Drain Details

Base Area (m²) 70.0 Depth above Invert Level (m) 0.050 Manning's N 0.015
 Base Perimeter (m) 70.000 Diameter (m) 0.180
 Top Area (m²) 90.0 Number of Pipes 1

Filtration Layers

Filter Side Infiltration (m/hr) 0.00000

Name	Depth (mm)	Porosity	Rate (m/hr)	Safety Factor
Void	300	1.00	10.00000	2.0
Mulch	100	0.30	1.00000	2.0
Filtration	700	0.10	0.03600	2.0
Transition	100	0.10	0.18000	2.0
Storage	600	0.30	1.00000	2.0

Bio-Retention Area Pipe: S10.000

Manning's N 0.060 Infiltration Coefficient Base (m/hr) 0.00000
 Invert Level (m) 7.100 Infiltration Coefficient Side (m/hr) 0.00000
 Porosity 1.00 Safety Factor 2.0

Under Drain Details

Base Area (m²) 60.0 Depth above Invert Level (m) 0.050 Manning's N 0.015
 Base Perimeter (m) 53.000 Diameter (m) 0.150
 Top Area (m²) 75.0 Number of Pipes 1

Filtration Layers

Filter Side Infiltration (m/hr) 0.00000

Name	Depth (mm)	Porosity	Rate (m/hr)	Safety Factor
Void	300	1.00	10.00000	2.0
Mulch	100	0.30	1.00000	2.0
Filtration	700	0.10	0.03600	2.0
Transition	100	0.10	0.18000	2.0
Storage	600	0.30	1.00000	2.0

Bio-Retention Area Pipe: S11.000

Manning's N 0.060 Infiltration Coefficient Base (m/hr) 0.00000
 Invert Level (m) 7.100 Infiltration Coefficient Side (m/hr) 0.00000
 Porosity 1.00 Safety Factor 2.0

Under Drain Details

Base Area (m²) 70.0 Base Perimeter (m) 68.000 Top Area (m²) 90.0

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Bio-Retention Area Pipe: S11.000

Depth above Invert Level (m) 0.050 Number of Pipes 1
 Diameter (m) 0.150 Manning's N 0.015

Filtration Layers
 Filter Side Infiltration (m/hr) 0.00000

Name	Depth (mm)	Porosity	Rate (m/hr)	Safety Factor
Void	300	1.00	10.00000	2.0
Mulch	100	0.30	1.00000	2.0
Filtration	700	0.10	0.03600	2.0
Transition	100	0.10	0.18000	2.0
Storage	600	0.30	1.00000	2.0

Infiltration Basin Manhole: S19, DS/PN: S1.007

Invert Level (m) 5.500 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.02530 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.02530

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	426.1	1.000	673.8

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH D3 (1km) 0.373
 Site Location GB 459600 105500 SU 59600 05500 E (1km) 0.301
 C (1km) -0.026 F (1km) 2.238
 D1 (1km) 0.440 Cv (Summer) 0.750
 D2 (1km) 0.317 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	15 Winter	1	+0%					8.287	-0.113
S2.000	S2	15 Summer	1	+0%					8.131	-0.119
S1.001	S3	15 Winter	1	+0%	100/15 Summer				7.908	-0.092
S3.000	S0	15 Winter	1	+0%					8.225	-1.775
S3.001	S0	15 Winter	1	+0%	100/15 Summer				7.965	-0.085
S4.000	S0	15 Winter	1	+0%					8.007	-1.793
S4.001	S0	15 Winter	1	+0%	100/15 Summer				7.807	-0.093
S1.002	S4	30 Winter	1	+0%	100/15 Summer				7.482	-0.143
S5.000	S0	15 Winter	1	+0%					7.613	-1.787
S5.001	S0	15 Winter	1	+0%	100/15 Summer				7.249	-0.101
S6.000	S0	15 Winter	1	+0%					7.618	-1.782
S6.001	S0	15 Winter	1	+0%	100/15 Summer				7.251	-0.099
S1.003	S5	15 Winter	1	+0%	30/15 Summer				7.134	-0.141
S7.000	S6	15 Winter	1	+0%					8.052	-0.248
S7.001	S7	15 Winter	1	+0%					7.717	-0.233
S7.002	S8	15 Winter	1	+0%	100/15 Summer				7.426	-0.224
S7.003	S9	15 Winter	1	+0%	100/15 Summer				7.175	-0.225
S8.000	S10	15 Winter	1	+0%					8.033	-0.192
S9.000	S11	15 Summer	1	+0%					8.030	-0.195
S8.001	S12	15 Winter	1	+0%					7.811	-0.164
S8.002	S13	15 Winter	1	+0%	100/15 Summer				7.392	-0.183
S7.004	S14	15 Winter	1	+0%	30/15 Summer				6.967	-0.183
S7.005	S15	15 Winter	1	+0%	30/15 Summer				6.755	-0.195
S10.000	S0	15 Winter	1	+0%					7.107	-1.793
S10.001	S0	15 Winter	1	+0%	30/15 Summer				6.880	-0.120
S11.000	S0	15 Winter	1	+0%					7.108	-1.792
S11.001	S0	15 Winter	1	+0%	30/15 Summer				6.838	-0.112
S1.004	S16	15 Winter	1	+0%	30/15 Summer				6.686	-0.114
S1.005	S17	15 Winter	1	+0%					6.387	-0.163

Coombe House
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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe		Level Exceeded	Status
		Volume (m ³)	Flow / Cap. (l/s)	Flow / Cap. (l/s)	Overflow (l/s)		
S1.000	S1	0.000	0.13		2.3		OK
S2.000	S2	0.000	0.10		2.5		OK
S1.001	S3	0.000	0.32		4.7		OK
S3.000	S0	0.000	0.01		6.8		OK
S3.001	S0	0.000	0.40		5.1		OK
S4.000	S0	0.000	0.01		5.9		OK
S4.001	S0	0.000	0.31		4.3		OK
S1.002	S4	0.000	0.28		11.1		OK
S5.000	S0	0.000	0.01		4.2		OK
S5.001	S0	0.000	0.23		3.9		OK
S6.000	S0	0.000	0.01		4.3		OK
S6.001	S0	0.000	0.25		4.2		OK
S1.003	S5	0.000	0.30		16.2		OK
S7.000	S6	0.000	0.07		6.8		OK
S7.001	S7	0.000	0.11		9.5		OK
S7.002	S8	0.000	0.14		12.2		OK
S7.003	S9	0.000	0.14		13.5		OK
S8.000	S10	0.000	0.05		2.7		OK
S9.000	S11	0.000	0.04		2.5		OK
S8.001	S12	0.000	0.16		7.7		OK
S8.002	S13	0.000	0.08		7.8		OK
S7.004	S14	0.000	0.31		22.9		OK
S7.005	S15	0.000	0.26		22.7		OK
S10.000	S0	0.000	0.00		2.1		OK
S10.001	S0	0.000	0.09		2.0		OK
S11.000	S0	0.000	0.01		3.7		OK
S11.001	S0	0.000	0.15		3.5		OK
S1.004	S16	0.000	0.66		41.9		OK
S1.005	S17	0.000	0.42		41.1		OK

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level	Surcharged Depth
									(m)	(m)
S1.006	S18	15 Winter	1	+0%	100/180 Winter				5.868	-0.182
S1.007	S19	720 Winter	1	+0%					5.719	-0.981

PN	US/MH Name	Flooded		Pipe		Level Exceeded
		Volume (m³)	Flow / Cap. (l/s)	Flow (l/s)	Status	
S1.006	S18	0.000	0.33	41.0	OK	
S1.007	S19	0.000	0.00	0.0	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH D3 (1km) 0.373
 Site Location GB 459600 105500 SU 59600 05500 E (1km) 0.301
 C (1km) -0.026 F (1km) 2.238
 D1 (1km) 0.440 Cv (Summer) 0.750
 D2 (1km) 0.317 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	15 Winter	30	+0%					8.319	-0.081
S2.000	S2	15 Winter	30	+0%					8.157	-0.093
S1.001	S3	15 Winter	30	+0%	100/15 Summer				7.972	-0.028
S3.000	S0	15 Winter	30	+0%					8.279	-1.721
S3.001	S0	15 Winter	30	+0%	100/15 Summer				8.036	-0.014
S4.000	S0	15 Winter	30	+0%					8.076	-1.724
S4.001	S0	15 Winter	30	+0%	100/15 Summer				7.869	-0.031
S1.002	S4	15 Winter	30	+0%	100/15 Summer				7.581	-0.044
S5.000	S0	15 Winter	30	+0%					7.641	-1.759
S5.001	S0	15 Winter	30	+0%	100/15 Summer				7.333	-0.017
S6.000	S0	15 Winter	30	+0%					7.657	-1.743
S6.001	S0	15 Winter	30	+0%	100/15 Summer				7.335	-0.015
S1.003	S5	15 Winter	30	+0%	30/15 Summer				7.326	0.051
S7.000	S6	15 Winter	30	+0%					8.096	-0.204
S7.001	S7	15 Winter	30	+0%					7.777	-0.173
S7.002	S8	15 Winter	30	+0%	100/15 Summer				7.502	-0.148
S7.003	S9	15 Winter	30	+0%	100/15 Summer				7.323	-0.077
S8.000	S10	15 Winter	30	+0%					8.062	-0.163
S9.000	S11	15 Winter	30	+0%					8.056	-0.169
S8.001	S12	15 Winter	30	+0%					7.870	-0.105
S8.002	S13	15 Winter	30	+0%	100/15 Summer				7.429	-0.146
S7.004	S14	15 Winter	30	+0%	30/15 Summer				7.277	0.127
S7.005	S15	15 Winter	30	+0%	30/15 Summer				7.131	0.181
S10.000	S0	15 Winter	30	+0%					7.121	-1.779
S10.001	S0	15 Winter	30	+0%	30/15 Summer				7.037	0.037
S11.000	S0	15 Winter	30	+0%					7.127	-1.773
S11.001	S0	15 Winter	30	+0%	30/15 Summer				7.030	0.080
S1.004	S16	15 Winter	30	+0%	30/15 Summer				7.053	0.253
S1.005	S17	15 Winter	30	+0%					6.474	-0.076

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Flow / Overflow (l/s)	Flow (l/s)		
S1.000	S1	0.000	0.42		7.2	OK	
S2.000	S2	0.000	0.31		7.8	OK	
S1.001	S3	0.000	0.96		14.3	OK	
S3.000	S0	0.000	0.04		20.4	OK	
S3.001	S0	0.000	1.00		12.8	OK	
S4.000	S0	0.000	0.03		18.7	OK	
S4.001	S0	0.000	0.99		13.8	OK	
S1.002	S4	0.000	0.84		33.1	OK	
S5.000	S0	0.000	0.03		13.0	OK	
S5.001	S0	0.000	0.65		11.2	OK	
S6.000	S0	0.000	0.03		13.4	OK	
S6.001	S0	0.000	0.74		12.5	OK	
S1.003	S5	0.000	0.81		44.1	SURCHARGED	
S7.000	S6	0.000	0.22		21.4	OK	
S7.001	S7	0.000	0.36		31.4	OK	
S7.002	S8	0.000	0.50		42.2	OK	
S7.003	S9	0.000	0.46		44.3	OK	
S8.000	S10	0.000	0.17		8.4	OK	
S9.000	S11	0.000	0.14		7.8	OK	
S8.001	S12	0.000	0.53		26.0	OK	
S8.002	S13	0.000	0.26		26.3	OK	
S7.004	S14	0.000	0.90		65.7	SURCHARGED	
S7.005	S15	0.000	0.74		63.5	SURCHARGED	
S10.000	S0	0.000	0.01		6.7	OK	
S10.001	S0	0.000	0.41		9.4	SURCHARGED	
S11.000	S0	0.000	0.02		11.1	OK	
S11.001	S0	0.000	0.70		17.0	SURCHARGED	
S1.004	S16	0.000	1.42		89.5	SURCHARGED	
S1.005	S17	0.000	0.91		89.2	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level	Surcharged Depth
									(m)	(m)
S1.006	S18	720 Winter	30	+0%	100/180 Winter				6.038	-0.012
S1.007	S19	720 Winter	30	+0%					6.036	-0.664

PN	US/MH Name	Flooded		Pipe		Level Exceeded
		Volume (m³)	Flow / Cap. (l/s)	Flow (l/s)	Status	
S1.006	S18	0.000	0.16	20.0	OK	
S1.007	S19	0.000	0.00	0.0	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH D3 (1km) 0.373
 Site Location GB 459600 105500 SU 59600 05500 E (1km) 0.301
 C (1km) -0.026 F (1km) 2.238
 D1 (1km) 0.440 Cv (Summer) 0.750
 D2 (1km) 0.317 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	15 Winter	100	+0%					8.339	-0.061
S2.000	S2	15 Winter	100	+0%					8.239	-0.011
S1.001	S3	15 Winter	100	+0%	100/15 Summer				8.203	0.203
S3.000	S0	15 Winter	100	+0%					8.319	-1.681
S3.001	S0	15 Winter	100	+0%	100/15 Summer				8.092	0.042
S4.000	S0	15 Winter	100	+0%					8.128	-1.672
S4.001	S0	15 Winter	100	+0%	100/15 Summer				7.914	0.014
S1.002	S4	15 Winter	100	+0%	100/15 Summer				7.834	0.209
S5.000	S0	15 Winter	100	+0%					7.662	-1.738
S5.001	S0	15 Winter	100	+0%	100/15 Summer				7.459	0.109
S6.000	S0	15 Winter	100	+0%					7.686	-1.714
S6.001	S0	15 Winter	100	+0%	100/15 Summer				7.462	0.112
S1.003	S5	15 Winter	100	+0%	30/15 Summer				7.456	0.181
S7.000	S6	15 Winter	100	+0%					8.120	-0.180
S7.001	S7	15 Winter	100	+0%					7.812	-0.138
S7.002	S8	15 Winter	100	+0%	100/15 Summer				7.739	0.089
S7.003	S9	15 Winter	100	+0%	100/15 Summer				7.672	0.272
S8.000	S10	15 Winter	100	+0%					8.077	-0.148
S9.000	S11	15 Winter	100	+0%					8.070	-0.155
S8.001	S12	15 Winter	100	+0%					7.908	-0.067
S8.002	S13	15 Winter	100	+0%	100/15 Summer				7.643	0.068
S7.004	S14	15 Winter	100	+0%	30/15 Summer				7.605	0.455
S7.005	S15	15 Winter	100	+0%	30/15 Summer				7.330	0.380
S10.000	S0	15 Winter	100	+0%					7.152	-1.748
S10.001	S0	15 Winter	100	+0%	30/15 Summer				7.152	0.152
S11.000	S0	15 Winter	100	+0%					7.141	-1.759
S11.001	S0	15 Winter	100	+0%	30/15 Summer				7.141	0.191
S1.004	S16	15 Winter	100	+0%	30/15 Summer				7.186	0.386
S1.005	S17	15 Winter	100	+0%					6.523	-0.027

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Flow / Overflow (l/s)	Flow (l/s)		
S1.000	S1	0.000	0.64		10.9	OK	
S2.000	S2	0.000	0.45		11.3	OK	
S1.001	S3	0.000	1.21		17.9	SURCHARGED	
S3.000	S0	0.000	0.06		31.2	OK	
S3.001	S0	0.000	1.12		14.3	SURCHARGED	
S4.000	S0	0.000	0.04		26.8	OK	
S4.001	S0	0.000	1.19		16.6	SURCHARGED	
S1.002	S4	0.000	1.04		40.6	SURCHARGED	
S5.000	S0	0.000	0.04		19.6	OK	
S5.001	S0	0.000	0.78		13.3	SURCHARGED	
S6.000	S0	0.000	0.04		20.2	OK	
S6.001	S0	0.000	0.86		14.6	SURCHARGED	
S1.003	S5	0.000	0.90		48.7	SURCHARGED	
S7.000	S6	0.000	0.33		32.2	OK	
S7.001	S7	0.000	0.54		47.3	OK	
S7.002	S8	0.000	0.69		58.1	SURCHARGED	
S7.003	S9	0.000	0.51		48.9	SURCHARGED	
S8.000	S10	0.000	0.25		12.7	OK	
S9.000	S11	0.000	0.21		11.7	OK	
S8.001	S12	0.000	0.80		39.1	OK	
S8.002	S13	0.000	0.37		36.6	SURCHARGED	
S7.004	S14	0.000	1.18		86.1	SURCHARGED	
S7.005	S15	0.000	1.00		86.1	SURCHARGED	
S10.000	S0	0.000	0.01		9.7	OK	
S10.001	S0	0.000	0.54		12.5	SURCHARGED	
S11.000	S0	0.000	0.02		13.6	OK	
S11.001	S0	0.000	0.81		19.7	SURCHARGED	
S1.004	S16	0.000	1.60		100.9	SURCHARGED	
S1.005	S17	0.000	1.00		98.0	OK	

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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level	Surcharged Depth
									(m)	(m)
S1.006	S18	720 Winter	100	+0%	100/180 Winter				6.218	0.168
S1.007	S19	720 Winter	100	+0%					6.216	-0.484

PN	US/MH Name	Flooded			Pipe		Level Exceeded
		Volume (m ³)	Flow / Cap.	Overflow (1/s)	Flow (1/s)	Status	
S1.006	S18	0.000	0.21		26.4	SURCHARGED	
S1.007	S19	0.000	0.00		0.0	OK	